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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/805,620	03/13/2001	Craig M. Carpenter	MI22-1563	3004
21567	7590	05/23/2006	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			FULLER, ERIC B	
			ART UNIT	PAPER NUMBER

1762

DATE MAILED: 05/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/805,620

Applicant(s)

CARPENTER ET AL.

Examiner

Eric B. Fuller

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 22-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's amendments and supporting arguments have been found convincing. The rejections of the previous Office Action have been withdrawn. However, in view of the newly filed IDS, the examiner has applied new ground of rejections. The allowance of claims 22-26 and 40-47 has been withdrawn in view of this newly cited art. According to 37 CFR 1.97(c) and 37 CFR 1.17(p) this rejection may be made final. However, as a courtesy, the examiner wishes to waive this right and this action will be non-final. Applicant's arguments are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 22-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okase (US 5,884,009) in view of Sneh (US 6,305,314).

Okase teaches a heated substrate treatment system where an annular, concentric purge curtain is fed into the chamber, around the periphery of the substrate and along the chamber walls, while the process gas is being injected over the substrate

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(column 10, lines 10-55). The curtain extends downward from above the substrate holder (figure 3). Figures 3 and 7 show the purge curtain flowing past the substrate holder and the flow diverter (51b) extending to below the substrate. In the same figures, the purge gas is not directed towards the substrate and back flow is minimized. The aspects of the lid are read on in the figures. The process prevents particles from adhering and either contaminating or corroding the walls of the chamber (column 2, lines 40-50). As the purge enters through an inlet port (77) and then exits this section through an exit port (76) into the chamber. All other limitations are taught in the various embodiments corresponding to figures 3 and 7. The reference teaches that the processing method may be CVD, but is silent to performing ALD in the process.

However, Sneh teaches that ALD is a type of CVD that is also susceptible to contaminants adhering to the walls of the chamber. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to perform an ALD process in the system taught by Okase. By doing so, one would have a reasonable expectation of success, as Okase teaches that the system is applicable to any vaporous treatment process that is susceptible to contaminants adhering to the chamber walls and Sneh teaches that ALD is such a process.

Claims 22-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiMeo, Jr. et al. (US 6,972,430) in view of Ohashi et al. (US 6,059,885), in further view of Yamamuka et al. (US 6,312,526).

DiMeo teaches an ALD process that uses purge to eliminate process gases from the chamber between steps (column 5, lines 1-25). The reference is silent to using a purge curtain.

However, Ohashi teaches an annular, concentric purge curtain being fed into the chamber, around the periphery of the substrate and along the chamber walls, while the process gas is being injected over the substrate (column 18, lines 28-67). The curtain extends downward from above the substrate holder (figures 7 and 8). Figure 7 shows the purge curtain flowing past the substrate holder. The solid walls that make up the hollow annular portions (21, 829) of figures 6 and 8 read on being a flow diverter (column 17, lines 10-19). These walls partially extend into the chamber from the top (first wall, lid) of the chamber. In figure 10, the direction of the apertures (1048) read on not directing the purge gas towards the substrate and minimizing back flow. The aspects of the lid are read on in the figures. The process prevents particles from adhering to the walls of the chamber by eliminating dead spaces by filling them with a purge curtain (column 2, lines 25-43). As the purge enters the section labeled "I" in figure 6, it goes through an inlet port and then exits this section through an exit port into the chamber.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use a purge curtain, as taught by Ohashi, in the process taught by DiMeo. By doing so, particles are prevented from adhering to the walls of the chamber.

The combination of references above fails to teach the flow diverter extending below the substrate holder. However, Yamamuka teaches such a configuration in figures 11 and 12. By doing so, the chances of particles adhering to the walls are even further reduced as the temperature distribution is made smaller and the process gas is not likely to flow against the flow of the purge gas (column 10, lines 10-58). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to extend the flow diverter to below the substrate. By doing so, one would reap the benefits of further reducing the chances of particles adhering to the walls of the chamber.

As to claim 37, Figures 1a-1d and figure 4 of Ohashi, teach the flow profiles that should be used when only one gas is being supplied to the chamber.

As to claim 39, Ohashi teaches that the purge curtain prevents adhering of particles to the wall. One of skill would recognize that it would also remove particles that are all ready adhered to the wall. To minimize the amount of purge gas would have been obvious at the time the invention was made to a person having ordinary skill in the art. By doing so, less purge gas is required. To determine the amount of purge gas in the curtain for the purge and deposition steps, if any at all, would have been within the skill of one practicing in the art, through routine experimentation.

All other limitations may be found in column 18, lines 28-67, and figures 7 and 8 of Ohashi.

Conclusion

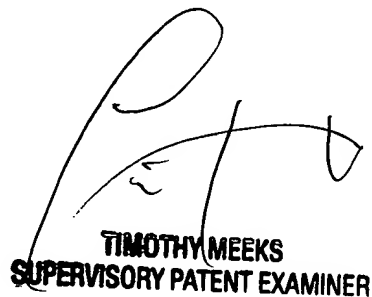
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Fuller whose telephone number is (571) 272-1420. The examiner can normally be reached on Mondays through Thursdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks, can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



EBF



TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER